



Interference
GP 4300

PATENT
Docket No.: 19603/2293 (CRF D-572L)

7/1/99 IDS

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s) : Stephen A. Johnston and John C. Sanford)
Reissue Application)
Serial No. : 09/299,426 (based on U.S. Patent No. 5,840,481,)
granted November 24, 1998))
Filed : April 26, 1999)
For : PARASITE-DERIVED RESISTANCE)

Examiner:
Unknown

Art Unit:
Unknown

RECEIVED
1999 JUL 19 PM 2:59
BOARD OF PATENT APPEALS
AND INTERFERENCES

INFORMATION DISCLOSURE STATEMENT
UNDER 37 CFR §§ 1.97-1.98

Assistant Commissioner for Patents
Washington, D.C. 20231
Box:

Dear Sir:

Pursuant to 37 CFR §§ 1.97-1.98, applicants hereby bring to the attention of the United States Patent and Trademark Office, the enclosed references listed on the attached PTO-1449 form.

The following references were cited during the prosecution of U.S. Patent No. 5,840,481 (the "841 patent"), which is in the reissue identified above, and were listed on the face of either the '841 patent or U.S. Patent No. 5,580,716 (the "716 patent"), which issued from a parent application of the '841 application:

WO 85 04898 to Skotnicki et al.;
EP 0 194 809 to Ahlquist et al.;
EP 0 110 385 to Moss et al.;
EP 0 140 308 to Takeshi et al.;
UK 2 148 302 A to Kaji et al.;
WO 83/01451 to Tullis et al.;
U.S. Patent No. 4,774,182 to Szybalski;

- Chang et al., "Gene Expression from Both IntronLess and Intron-Containing Rous Sarcoma Virus Clones is Specifically Inhibited by Anti-Sense RNA," Molecular and Cellular Biology, 5(9):2341-2348 (1985);
- Ellison et al., "Thermal Regulation of β -Galactosidase Synthesis Using Anti-Sense RNA Directed Against the Coding Portion of the mRNA," J. Biol Chem., 260(16):9085-9087 (1985);
- Harland et al., "Translation of mRNA Injected into *Xenopus* Oocytes is Specifically Inhibited by Antisense RNA," J. Cell. Biol., 101:1094-1099 (1985);
- Izant et al., "Constitutive and Conditional Suppression of Exogenous and Endogenous Genes by Anti-Sense RNA," Science, 229:345-352 (1985);
- Mizuno et al., "Regulation of Gene Expression by a Small RNA Transcript (micRNA) in *Escherichia Coli* K-12," Proc. Japan Acad., 59:335-338 (1983);
- Nordstrom, "Antisense RNA," Trends in Biochem. Sci., 10(6):232 (1985);
- Rosenberg et al., "Production of Phenocopies by *Kruppel* Anti-Sense RNA Injection Into *Drosophila* Embryos," Nature, 313:703-706 (1985);
- Weintraub et al., "Anti-Sense RNA as a Molecular Tool for Genetic Analysis," Trends in Genetics, 1:22-25 (1985);
- Zamecnik et al., "Inhibition of Rous Sarcoma Virus Replication and Cell Transformation by a Specific Oligodeoxynucleotide," Proc. Natl. Acad. Sci. USA., 75(1):280-284 (1978);
- Abel et al., "Delay of Disease Development in Transgenic Plants That Express the Tobacco Mosaic Virus Coat Protein Gene," Science, 232:738-743 (1986);
- Cuozzo et al., "Viral Protection in Transgenic Tobacco Plants Expressing the Cucumber Mosaic Virus Coat Protein or its Antisense RNA," Bio/Technology, 6:549-557 (1988);
- Gerlach et al., "Construction of a Plant Disease Resistance Gene From the Satellite RNA of Tobacco Ringspot Virus," Nature, 328:802-805 (1987);
- Harrison et al., "Virus Resistance in Transgenic Plants That Express Cucumber Mosaic Virus Satellite RNA," Nature, 328:799-802 (1987);
- Kim et al., "Stable Reduction of Thymidine Kinase Activity in Cells Expressing High Levels of Anti-Sense RNA," Cell, 42:129-138 (1985);
- Melton, "Injected Anti-Sense RNAs Specifically Block Messenger RNA Translation *in Vivo*," Proc. Natl. Acad. Sci. USA., 82:144-148 (1985);
- Sanford et al., "The Concept of Parasite-Derived Resistance - Deriving Resistance Genes from the Parasite's Own Genome," J. Theor. Biol., 113:395-405 (1985);
- Stephenson et al., "Inhibition of Rous Sarcoma Viral RNA Translation by a Specific Oligodeoxyribonucleotide," Proc. Natl. Acad. Sci. USA., 75(1):285-288 (1978);
- "Genetics of Bacteria and Viruses," Biological Abstracts, 80 (1985);
- Bialy et al., "A New Route to Virus Resistance in Plants," Bio/Technology, 4:96 (1986);

- Palukaitis et al., "A Model to Explain the "Cross-Protection" Phenomenon Shown by Plant Viruses and Viroids," Plant- Microbe Interactions, 1(17):420-429 (1984);
- Baulcombe et al., "Expression of Biologically Active Viral Satellite RNA from the Nuclear Genome of Transformed Plants," Nature, 321:446-449 (1986);
- Frischmuth et al., "African Cassava Mosaic Virus DI DNA Interferes with the Replication of Both Genomic Components," Virology, 183:539-544 (1991);
- Jacquemond et al., "A Gene Coding for a Monomeric Form of Cucumber Mosaic Virus Satellite RNA Confers Tolerance to CMV," Molecular Plant-Microbe Interaction, 1(8):311-316 (1988);
- Stanley et al., "Defective Viral DNA Ameliorates Symptoms of Geminivirus Infection in Transgenic Plants," Proc. Natl. Acad. Sci. USA, 87:6291-6295 (1990);
- Lapidot et al., "A Dysfunctional Movement Protein of Tobacco Mosaic Virus that Partially Modifies the Plasmodesmata and Limits Virus Spread in Transgenic Plants," The Plant Journal, 4(6):959-970 (1993);
- Blanc et al., "Biological Activity of Cauliflower Mosaic Virus Aphid Transmission Factor Expressed in a Heterologous System," Virology, 192:643-650 (1993);
- MacKenzie et al., "Resistance to Tomato Spotted Wilt Virus Infection in Transgenic Tobacco Expressing the Viral Nucleocapsid Gene," Molecular Plant-Microbe Interactions, 5(1):34-40 (1992);
- Golemboski et al., "Plants Transformed with a Tobacco Mosaic Virus Nonstructural Gene Sequence are Resistant to the Virus," Proc. Natl. Acad. Sci. USA, 87:6311-6315 (1990);
- Braun et al., "Expression of Amino-Terminal Portions or Full-Length Viral Replicase Genes in Transgenic Plants Confers Resistance to Potato Virus X Infection," The Plant Cell, 4:735-744 (1992);
- Anderson et al., "A Defective Replicase Gene Induces Resistance to Cucumber Mosaic Virus in Transgenic Tobacco Plants," Proc. Natl. Acad. Sci. USA, 89:8759-8763 (1992);
- MacFarlane et al., "Plants Transformed with a Region of the 201-Kilodalton Replicase Gene from Pea Early Browning Virus RNA1 are Resistant to Virus Infection," Proc. Natl. Acad. Sci. USA, 89:5829-5833 (1992);
- Audy et al., "Replicase-Mediated Resistance to Potato Virus Y in Transgenic Tobacco Plants," Molecular Plant-Microbe Interactions, 7(1):15-22 (1994);
- Longstaff et al., "Extreme Resistance to Potato Virus X Infection in Plants Expressing a Modified Component of the Putative Viral Replicase," The EMBO Journal, 12(2):379-386 (1993);
- Inokuchi et al., "Interference with Viral Infection by Defective RNA Replicase," J. of Virology, 61(12):3946-3949 (1987);
- Rezaian et al., "Anti-Sense RNAs of Cucumber Mosaic Virus in Transgenic Plants Assessed for Control of the Virus," Plant Molecular Biology, 11:463-471 (1988);

Dougherty et al., "RNA-Mediated Virus Resistance in Transgenic Plants: Exploitation of a Cellular Pathway Possibly Involved in RNA Degradation," Molecular Plant-Microbe Interactions, 7(5):544-552 (1994);

Lindbo et al., "Untranslatable Transcripts of the Tobacco Etch Virus Coat Protein Gene Sequence Can Interfere with Tobacco Etch Virus Replication in Transgenic Plants and Protoplasts," Virology, 189:725-733 (1992);

de Haan et al., "Characterization of RNA-Mediated Resistance to Tomato Spotted Wilt Virus in Transgenic Tobacco Plants," Bio/Technology, 10:1133-1137 (1992);

Van der Vlugt et al., "Evidence for Sense RNA-Mediated Protection to PVY^N in Tobacco Plants Transformed with the Viral Coat Protein Cistron," Plant Molecular Biology, 20:631-639 (1992);

Huntley et al., "Minus Sense Transcripts of Brome Mosaic Virus RNA-3 Intercistronic Region Interfere with Viral Replication," Virology, 192:290-297 (1993);

Beachy et al., "Coat Protein-Mediated Resistance Against Virus Infection," Annu. Rev. Phytopathol., 28:451-474 (1990);

Fitch et al., "Virus Resistant Papaya Plants Derived from Tissues Bombarded with the Coat Protein Gene of Papaya Ringspot Virus," Bio/Technology, 10:1466-1472 (1992);

Van der Wilk et al., "Expression of the Potato Leafroll Luteovirus Coat Protein Gene in Transgenic Potato Plants Inhibits Viral Infection," Plant Molecular Biology, 17:431-439 (1991);

Lindbo et al., "Pathogen-Derived Resistance to a Potyvirus: Immune and Resistant Phenotypes in Transgenic Tobacco Expressing Altered Forms of a Potyvirus Coat Protein Nucleotide Sequence," Molecular Plant-Microbe Interactions, 5(2):144-153 (1992);

Gielen et al., "Engineered Resistance to Tomato Spotted Wilt Virus, a Negative-Strand RNA Virus," Bio/Technology, 9:1363-1367 (1991);

Nejidat et al., "Transgenic Tobacco Plants Expressing a Coat Protein Gene of Tobacco Mosaic Virus are Resistant to Some Other Tobamoviruses," Molecular Plant-Microbe Interactions, 3(4):247-251 (1990);

Dhaese et al., "The Temperate B. *Subtilis* Phage ø105 Genome Contains at Least Two Distinct Regions Encoding Superinfection Immunity," Mol. Gen. Genet., 200:490-492 (1985);

Hill et al., "Cloning, Expression, and Sequence Determination of a Bacteriophage Fragment Encoding Bacteriophage Resistance in *Lactococcus Lactis*," J. Bacteriol., 172(11):6419-6426 (1990);

Holzmayer et al., "Isolation of Dominant Negative Mutants and Inhibitory Antisense RNA Sequences by Expression Selection of Random DNA Fragments," Nucleic Acids Res., 20(4):711-717 (1992);

Kim et al., "Bacteriophage Resistance in *Lactococcus lactis* ssp. *lactis* Using Antisense Ribonucleic Acid," J. Dairy Sci., 75:1761-1767 (1992);

- Gudkov et al., "Cloning Mammalian Genes by Expression Selection of Genetic Suppressor Elements: Association of Kinesin with Drug Resistance and Cell Immortalization," Proc. Natl. Acad. Sci. USA., 91:3744-3748 (1994);
- Hull et al., "Approaches to Nonconventional Control of Plant Virus Diseases," Critical Reviews in Plant Sciences, 11(1):17-33 (1992);
- van den Elzen et al., "Engineering Virus Resistance in Agricultural Crops," Plant Molecular Biology, 13:337-346 (1989);
- Zimmer et al., "Genome Distribution of Adenovirus Total and Self-Complementary Nuclear RNA at Early Times," Virology, 111:301-311 (1981).

The following references were cited during the prosecution of the parent applications for the '841 patent, but were not cited on the face of either the '841 or '716 patents:

- U.S. Patent No. 4,396,601 to Salser et al.;
- U.S. Patent No. 4,632,909 to Carter et al.;
- U.S. Patent Application 156,188 to Greatbatch et al.;
- U. S Patent No. 4,536,475 to Anderson;
- Arntzen et al., "Molecular Strategies for Crop Protection," UCLA Symposia on Molecular and Cellular Biology, 10C: 3-50 (1986);
- Mizuno, et al., "A Unique Mechanism Regulating Gene Expression: Translational Inhibition by a Complementary RNA Transcript (micRNA)," Proc. Natl. Acad. Sci. USA., 81:1966-1970 (1984);
- Eikhom et al., "Isolation of Free Minus Strands from Q β -infected *Escherichia coli*," Chem. Abstr., 82(25): No. 166075w (1975);
- Fraley et al., "Expression of Bacterial Genes in Plant Cells," Proc. Natl. Acad. Sci. USA., 80:4803-4807 (1983);
- Izant et al., "Inhibition of Thymidine Kinase Gene Expression by Anti-Sense RNA: A Molecular Approach to Genetic Analysis," Cell, 36:1007-1015 (1984);
- Kolakofsky et al., "Q β Replicase as Repressor of Q β RNA-directed Protein Synthesis," Chem. Abstr., 75(23): No. 136914g, p. 4 (1971);
- Marcus et al., "Viral Polymerase Proteins as Antiviral Agents (Intrinsic Interference)," Dept. Microbiol. And Imm., A. Einstein College Med., pp. 185-198 (1970);
- Schumann et al., "Cloning and Biological Characterization of the Immunity Region of *Escherichia coli* Phage Mu," Gene, 5:275-290 (1979);
- Wade et al., "Race-Specific Molecules That Protect Soybeans from *Phytophthora megasperma* var. *sojiae*," Proc. Natl. Acad. Sci. USA., 76(9):4433-4437 (1979);
- Coleman et al., "A Novel Immune System Against Bacteriophage Infection Using Complementary RNA (micRNA)," Nature, 315:601-603 (1985);

- Baltimore, "Intracellular Immunization," Nature, 335:395-396 (1988);
- Chang et al., "Inhibition of Rous Sarcoma Virus Replication of Antisense RNA," Journal of Virology, 61(3):921-924 (1987);
- Friedman et al., "Expression of a Truncated Viral *Trans*-Activator Selectively Impedes Lytic Infection by Its Cognate Virus," Nature, 335:452-454 (1988);
- Houwing et al., "Coat Protein Blocks the in Vitro Transcription of the Virion RNAs of Alfalfa Mosaic Virus," FEBS. Lett., 209(2):284-288 (1986);
- Loesch-Fries et al., "Expression of Alfalfa Mosaic Virus RNA 4 in Transgenic Plants Confers Virus Resistance," The EMBO Journal, 6(7):1845-1851 (1987);
- Malim et al., "Functional Dissection of the HIV-1 REV *Trans*-Activator-Derivation of a Trans-Dominant Repressor of Rev Function," Cell, 58:205-214 (1989);
- Nelson et al., "Virus Tolerance, Plant Growth, and Field Performance of Transgenic Tomato Plants Expressing Coat Protein from Tobacco Mosaic Virus," Bio/Technology, 6:403-409 (1988);
- Petrovskis et al., "Reduced Yield of Infectious Pseudorabies Virus and Herpes Simplex Virus From Cell Lines Producing Viral Glycoprotein gp50," Journal of Virology, 62(6):2196-2199 (1988);
- Salter, "Gene Insertion into the Avian Germ Line," Animal Breeding Opportunities, 12:32-57 (1988);
- Whitaker-Dowling et al., "Viral Interference-Dominance of Mutant Viruses Over Wild-Type Virus in Mixed Infections," Microbiol. Rev., 51(2):179-191 (1987);
- Grumet et al., "Pathogen-Derived Resistance to Viral Infection Using a Negative Regulatory Molecule," Journal of Virology, 161:561-569 (1987);
- Coleman et al., "The Use of RNAs Complementary to Specific mRNAs to Regulate the Expression of Individual Bacterial Genes," Cell, 37:429-436 (1984);
- Simons et al., "Translational Control of IS10 Transposition," Cell, 34:683-691 (1983);
- Sequeira, "Cross Protection and Induced Resistance: Their Potential for Plant Disease Control," Trends in Biotech., 2(2):25- 29 (1984);
- Grumet et al., "A Demonstration of Pathogen-Derived Resistance Using *Escherichia coli* and the Bacteriophage, Q β ," Molecular Strategies for Crop Protection, pp. 3-12 (1987);
- Roberts et al., "A General Method for Maximizing the Expression of a Cloned Gene," Proc. Natl. Acad. Sci. USA, 76(2):760-764 (1979);
- Campbell et al., "Protein-Mediated Translational Repression," Gene Function in Prokaryotes, pp. 185-210 (1983);
- Ponz et al., "Mechanisms of Resistance to Plant Viruses," Ann. Rev. Phytopathol., 24:355-381 (1986);
- Ellingboe, "Prospects for Using Recombinant DNA Technology to Study Race-Specific Interactions between Host and Parasite," pp. 103-127;

- Wenzel, "Strategies in Unconventional Breeding for Disease Resistance," Ann. Rev. Phytopathol., 23:149-172 (1985);
- Lauer et al., "Construction of Overproducers of the Bacteriophage 434 Repressor and cro Proteins," J. Molecular and Applied Genetics, 1(2):139-147 (1981);
- Staskawicz et al., "Molecular Characterization of Cloned Avirulence Genes from Race 0 and Race 1 of *Pseudomonas syringae* pv. *glycinea*," J. Bacteriol., 169(12):5789-5794 (1987);
- Macrina, "Molecular Cloning of Bacterial Antigens and Virulence Determinants," Ann. Rev. Microbiol., 38:193-219 (1984);
- Keen et al., "Host Range Determinants in Plant Pathogens and Symbionts," Ann. Rev. Microbiol., 42:421-440 (1988);
- Sanford, "Applying the PDR Principle to AIDS," J. Theor. Biol., 130:469-480 (1988);
- Zamecnik, et al., "Inhibition of Replication and Expression of Human T-Cell Lymphotropic Virus Type III in Cultured Cells By Exogenous Synthetic Oligonucleotides Complementary to Viral RNA," Proc. Natl. Acad. Sci. USA, 83:4143-4146 (1986);
- Matsukura et al., "Phosphorothioate Analogs of Oligodeoxynucleotides: Inhibitors of Replication and Cytopathic Effects of Human Immunodeficiency Virus," Proc. Natl. Acad. Sci. USA, 84:7706-7710 (1987);
- To et al., "Inhibition of Retroviral Replication by Anti-Sense RNA," Molecular and Cellular Biology, 6(12):4758-4762 (1986);
- Courtice, "Satellite Defences for Plants," Nature, 328:758-759 (1987);
- Johnston et al., "The Use of Pathogen-Derived Resistance to Develop Plants Resistant to Potyviruses," A Pre-Proposal Submitted to Ciba Geigy Corporation (1986);
- Kamer et al., "Primary Structural Comparison of RNA-Dependent Polymerases from Plant, Animal and Bacterial Viruses," Nucleic Acids Res., 12(18):7269-7282 (1984);
- J. Cellular Biochem., Supplement 12C, UCLA Symposia on Molecular & Cellular Biology, Abstracts 17th Annual Meetings, February 28 - April 10, 1988, pp. 188, 238, 239, 263, 272, 281, 286, 288, 289, 292, 298;
- Letter from Samuel Broder, M.D., Associate Director, Clinical Oncology Program, NCI, Department of Health & Human Services, National Institutes of Health, to Dr. John C. Sanford (5/19/88);
- Letter from William Dougherty, Associate Professor of Microbiology, Department of Microbiology, Oregon State University, to Dr. Stephen Johnston (6/7/88);
- Sanford, "The Genetic Engineering of Resistance to Potyviruses in Plants Using Papaya Ringspot as a Model System," U.S. Department of Agriculture Science and Education - Grant Application to Cornell University (2/21/86);
- Letter from John Sanford of New York State Agricultural Experiment Station, Cornell University to Drs. Loesch-Fries, Merle, Zinnen, Eurhop, Hill, Krahn, Jarvis, Nelson, and Halk of Agrigenetics Adv. Sci. Co., Madison, WI (7/29/87);

Letter from Stephen Johnston, Duke University and John Sanford, Cornell University to Patricia Abel, Richard Nelson, Barun De, Nancy Hoffman, Steve Rogers, Robert Fraley, and Roger Beachy. (7/21/86);

Letter from M. Reza Sadaie, Ph.D. of Department of Health and Human Services, National Institutes of Health, National Cancer Institute to Dr. John Sanford (7/26/88);

Barton et al., "Regeneration of Intact Tobacco Plants Containing Full Length Copies of Genetically Engineered T-DNA, and Transmission of T-DNA to R1 Progeny," Cell, 32:1033-1043 (1983);

Winter, et al., "Overproduction of Bacteriophage Q β Maturation (A₂) Protein Leads to Cell Lysis," Cell, 33:877-885 (1983);

Karnik, et al., "The Lysis Function of RNA Bacteriophage Q β is Mediated by the Maturation (A₂) Protein," The EMBO Journal, 2(9):1521-1526 (1983);

Fairfield, et al., "Malaria Parasites Adopt Host Cell Superoxide Dismutase," Science, 221:764-66 (1983);

Barton, et al., "Prospects in Plant Genetic Engineering," Science, 219:671-675 (1983);

Yamamoto, et al., "The 'Pricking' Method," Exp. Cell Res. 142:79-84 (1982);

Kamen, et al., "Characterization of the Subunits of Q β Replicase," Nature, 228:527-533 (1970);

Held, et al., "Cloning and Localization of the Lepidopteran Protoxin Gene of *Bacillus Thuringiensis* Subsp. *Kurstaki*," Proc. Natl. Acad. Sci. USA, 79:6065-6069 (1982);

Graham, et al., "A New Technique for the Assay of Infectivity of Human Adenovirus 5 DNA," Virology 52:456-467 (1973);

Silverman, et al., "Two New Classes of F-pilli Mutants of *Escherichia Coli* Resistant to Infection by the Male Specific Bacteriophage f₂," Short Communications, pp:142-146 (1968);

Mandel, et al., "Calcium-Dependent Bacteriophage DNA Infection," J. Mol. Biol. 53:150-162 (1970);

Krens, et al., "In vitro Transformation of Plant Protoplasts with Ti-Plasmid DNA," Nature, 296:72-74 (1982);

Bernardi, et al., "Nucleotide Sequence at the Binding Site for Coat Protein on RNA of Bacteriophage R17," Proc. Nat. Acad. Sci. USA, 69(10):3033-3-37 (1972);

Staskawicz, et al., "Cloned Avirulence Gene of *Pseudomonas syringae* pv. *glycinea* Determines Race-Specific Incompatibility on *Glycine Max* (L.) Merr.," Proc. Nat. Acad. Sci. USA, 81:6024-6028 (1984);

Potrykus, "Transplantation of Chloroplasts into Protoplasts of *Petunia*," Z. Pflanzenphysiol. Bd., 70.S.:364-366 (1973);

Flashman, "Mutational Analysis of the Operators of Bacteriophage Lambda," Mol. Gen. Genet., 166:61-73 (1978);

Mouches, et al., "Turnip Yellow Mosaic Virus RNA-Replicase Contains Host and Virus-Encoded Subunits," Virology, 134:78-90 (1984);

Wigler, et al., "Transformation of Mammalian Cells with Genes from Procaryotes and Eucaryotes," Cell, 16:777-785 (1979).

The following references were not cited in the parent applications:

U.S. Patent 4,407,956 to Howell et al.;

EP 0 126 546 to Kemp et al.;

WO 84/02913 to Fraley et al.;

EP 0 067 553 to Pelcher et al.;

EP 0 242 016 to Baulcombe;

WO 86/05516 to Johnston et al.;

EP 0 223 399 to McCormick et al.;

EP 0 240 332 to Loesch-Fries et al.;

EP 0 240 331 to Loesch-Fries et al.;

AU-A-57356/86 to Grimsley;

AU-A-63924/86 to McCormick et al.;

Sherwood et al., "The Specific Involvement of Coat Protein in Tobacco Mosaic Virus Cross Protection," Virology, 119:150-158 (1982);

Kozziel, et al., "A Cauliflower Mosaic Virus Promoter Directs Expression of Kanamycin Resistance in Morphogenic Transformed Plant Cells", J. Molecular and Applied Genetics, 2(6):549-564 (1984);

Herrera-Estrella, et al., "Light-Inducible and Chloroplast-Associated Expression of a Chimaeric Gene Introduced into *Nicotiana Tabacum* using a Ti Plasmid Vector," Nature, 310:115-120 (1984);

Hamilton, et al., "Complete Nucleotide-Sequence of Infectious Cloned DNA Components of Tomato Golden Mosaic Virus: Potential Coding Regions and Regulatory Sequences," The EMBO Journal, 2197-2205 (1984);

Herbomel, et al., "Relative Efficiencies of Eukaryotic Promoters in F9 EC versus Differentiated Cells, as Assayed by Transient Expression of Chloramphenicol Acetyltransferase", Chemical Abstracts, 100(5) No. 30430r (1983);

Sela, "Interferon-like Substance from Virus-Infected Plants," Virology 9:129-138 (1985);

Agrios, g.ed., Plant Pathology, Academic Press, Inc., New York, P. 585 (1978);

Velten, et al., "Isolation of a Dual Plant Promoter Fragment from the Ti Plasmid of *Agrobacterium Tumefaciens*", The EMBO Journal 3(12): 2723-2730 (1984);

De Block, et al., "Expression of Foreign Genes in Regenerated Plants and in their Progeny", The EMBO Journal, 3(8) 1681-1689 (1984);

Herrera-Estrella, et al., "Chimeric Genes as Dominant Selectable Markers in Plant Cells," The EMBO Journal, 2(6):987-995 (1983);

- Beachy et al., "Potential for Applying Genetic Transformation To Studies of Viral Pathogenesis and Cross-Protection," Biotechnology in Plant Science, 265-275 (1985);
- Hamilton, et al., "Using Plant Viruses for Disease Control," Hort-Science, 20(5):848-852 (1985);
- Loesch-Fries, et al., "Cloning of Alfalfa Mosaic Virus Coat Protein Gene and Anti-Sense RNA into a Binary Vector and their Expression in Transformed Tobacco Tissue," J. of Cell. Biochem., Supp. 10C:41 (1986);
- Bevan et al., "Expression of Tobacco Mosaic Virus Coat Protein by a Cauliflower Mosaic Virus Promoter in Plants Transformed by *Agrobacterium*," The EMBO Journal, 4(8):1921-1926 (1985);
- Zaitlin, et al., "Viral Cross Protection: More Understanding is Needed," Phytopathol., 66:382-383 (1976);
- Sarkar, et al., "A Proteinless Mutant of Tobacco Mosaic Virus: Evidence Against the Role of a Viral Coat Protein for Interference," Mol. Gen. Genet., 184:158-159 (1981);
- Eckhardt et al., "Blocking of the Initiation of Protein Biosynthesis by a Pentanucleotide Complementary to the 3' End of *Escherichia Coli* 16S rRNA," J. Bio. Chemistry, 254(22):1185-1188 (1979);
- Jayaraman et al., "Selective Inhibition of *Escherichia Coli* Protein Synthesis and Growth by Nonionic Oligonucleotides Complementary to the 3' End of 16S rRNA*," Proc. Natl. Acad. Sci. USA, 78(3):1537-1541 (1981);
- Marx, "New Ways to "Mutate" Genes," The Cetus-UCLA Symposium on the Molecular Biology of Development, (1984);
- Taniguchi et al., "Inhibition of Q β RNA 70S Ribosome Initiation Complex Formation by an Oligonucleotide Complementary to the 3' Terminal Region of *E. coli* 16S Ribosomal RNA," Nature, 275:770-772 (1978);
- Travers, "Regulation by Anti-Sense RNA," Nature, 311(5985):410 (1984);
- Calvert et al., "Base-Pairing Interactions between Small Nuclear RNAs and Nuclear RNA Precursors As Revealed by Psoralen Cross-Linking in Vivo," Cell, 26:363-370 (1981);
- Lerner et al., "Are snRNPs Involved in Splicing?" Nature, 283:220-224 (1980);
- Mount et al., "The Small Nuclear RNA-Protein Complex Selectively Binds a 5' Splice Site In Vitro," Cell, pp. 509-517 (1983);
- Letter from Dr. Leonard Godfrey, The Research Foundation of the State University of NY to Dr. Goldberg, Cetus Corporation (7/18/85);
- Goodman et al., "Gene Transfer in Crop Improvement," Science, 236:48-54 (1987);
- Ahlquist et al., "Localization of the Replicase Recognition Site within Brome Mosaic Virus RNA by Hybrid-Arrested RNA Synthesis," Plant Molecular Biology, 3:37-44 (1984);

- Meshi, et al., "Molecular Cloning of the Complementary DNA Copies of the Common and Cowpea Strains of Tobacco Mosaic Virus RNA," Virology, 118:64-75 (1982);
- Murray, et al, "Mechanism for RNA Splicing of Gene Transcripts", FEBS Letters, 106(1):5-7 (1979);
- Pederson et al., "Nuclear RNA-Protein Interactions and Messenger RNA Processing," J. Cell Biology, 97:1321-1326 (1983);
- Rogers, et al, "A Mechanism for RNA Splicing," Proc. Natl. Acad. Sci. USA, 77(4): 1877-1879 (1980);
- Klump et al., "Biologically Active Protease of Foot and Mouth Disease Virus is Expressed from Cloned Viral cDNA in *Escherichia coli*," Proc. Natl. Acad. Sci. USA, 81:3351-3355 (1984);
- Potrykus et al., "Gene Transfer to Cereals: An Assessment," Bio/Technology 8(6):535-542 (1990);
- Stalhandske et al., "Replicase Gene of Cocksackievirus β 3," J. of Virology, 51(3):742-746 (1984);
- Carr, et al., "Replicase-Mediated Resistance," Virology, 4:339-347 (1993);
- Mori, et al., "Expression of Brome Mosaic Virus-Encoded Replicase Genes in Transgenic Tobacco Plants," J. of General Virology 73:169-172 (1992);
- van Dun, et al., "Expression of Alfalfa Mosaic Virus cDNA1 and 2 in Transgenic Tobacco Plants," Virology, 163:572-578 (1988);
- Carr, et al., "Are the PR1 Proteins of Tobacco Involved in Genetically Engineered Resistance to TMV?" Virology, 169:470-473 (1989);
- Horsch et al., "Inheritance of Functional Foreign Genes in Plants," Science, 223:496-498 (1984);
- Blumenthal, et al., "Q β Replicase," The Enzymes, XV:267-279 (1982);
- Model, et al., "Characterization of Op3, a Lysis-Defective Mutant of Bacteriophage f2," Cell, 18:235-246 (1979);
- Robertson, et al., "Bacteriophage Coat Protein as Repressor," Nature, 218:533-536 (1968);
- Argos, et al., "Similarity in Gene Organization and Homology between Proteins of Animal Picornaviruses and a Plant Comovirus Suggest Common Ancestry of these Virus Families," Nuc. Acids Research, 12(18): 7251-7267 (1984);
- Joshi, et al., "Participation of the Host Protein(s) in the Morphogenesis of Bacteriophage P22," Mol. Gen. Genet., 186:44-49 (1982);
- Russel, et al., "A Bacterial Gene, *fp*, Required for Filamentous Bacteriophage f1 Assembly," J. of Bacteriology, 154(3):1064-1076, (1983);
- Zinder, et al., "Single-Stranded DNA-Containing Bacteriophages," Bio Essays, 5(2):84-87 (1986);

Letter from Stephen Johnston, Duke University to Dr. G. E. Harman, Agricultural Station, Geneva, NY. (7/23/85);

Hill, "Bacteriophage and Bacteriophage Resistance in Lactic Acid Bacteria," FEMS Microbiology Reviews, 12:87-108 (1993);

Biswas, et al., "Efficient System for Genetic Modification of Lactic Bacteria: Construction of Food Grade Strains," Lait, 73:145-151 (1993);

Lindbo, et al., "Induction of a Highly Specific Antiviral State in Transgenic Plants: Implications for Regulation of Gene Expression and Virus Resistance," The Plant Cell, 5:1749-1759 (1993);

Gilboa, et al., "Gene Therapy for Infectious Diseases: the AIDS Model," Trends in Genetics, 10(4):139-144 (1994);

Herskowitz, et al., "Functional Inactivation of Genes by Dominant Negative Mutations," Nature, 329:219-222 (1987);

Lee, et al., "Inhibition of HIV-1 in CEM Cells by a Potent TAR Decoy," Gene Therapy, 2:377-384 (1995);

Wilson, et al., "Strategies to Protect Crop Plants against Viruses: Pathogen-Derived Resistance Blossoms," Proc. Natl. Acad. Sci. USA, 90:3134-3141 (1993);

Scholthof, et al., "Control of Plant Virus Diseases by Pathogen-Derived Resistance in Transgenic Plants," Plant Physiol, 102:7-12 (1993);

Hemenway, et al., "Analysis of the Mechanism of Protection in Transgenic Plants Expressing the Potato Virus X Coat Protein or its Antisense RNA," The EMBO Journal, 7(5):1273-1280 (1988);

Turner, et al., "Expression of Alfalfa Mosaic Virus Coat Protein Gene Confers Cross-Protection in Transgenic Tobacco and Tomato Plants," The EMBO Journal, 6(5):1181-1188 (1987);

Lawson, et al., "Engineering Resistance to Mixed Virus Infection in a Commercial Potato Cultivar: Resistance to Potato Virus X and Potato Virus Y in Transgenic Russet Burbank," Bio/Technology, 8:127-134 (1990);

Kaniewski, et al., "Field Resistance of Transgenic Russet Burbank Potato to Effects of Infection By Potato Virus X and Potato Virus Y," Bio/Technology, 8:750-753 (1990);

Stark, et al., "Protection Against Potyvirus Infection in Transgenic Plants: Evidence for Broad Spectrum Resistance," Bio/Technology, 7:1257-1262 (1989);

Gasser, et al., "Genetically Engineering Plants for Crop Improvement," Science, 244:1293-1299 (1989);

"USDA Ok's Genetically Engineered Line of Squash," Genetic Engineering News, 15(1):1 and 39 (1995);

Brogli, et al., "Production of Disease-Resistant Transgenic Plants," Cur. Op. In Biotechnology, 4:148-151 (1993);

Hull, "Risks in Using Transgenic Plants?", Science, 264:1649-1652 (1994).

The references listed below were cited and reviewed in the parent application but we are unable to locate copies of these references:

"Genetics of Bacteria and Viruses," Biological Abstracts, 80 (1985);

Ellingboe, "Prospects for Using Recombinant DNA Technology to Study Race-Specific Interactions between Host and Parasite," pp. 103-127.

Respectfully submitted,

Date: 7/6/99

Dennis M. Connolly
Dennis M. Connolly
Registration No. 40,964

Nixon, Hargrave, Devans & Doyle LLP
Clinton Square, P.O. Box 1051
Rochester, New York 14603
Telephone: (716) 263-1741
Facsimile: (716) 263-1600

Certificate of Mailing - 37 CFR 1.8(a)	
I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on the date below.	
<u>July 6, 1999</u> Date	<u>Ruth R. Smith</u> Ruth R. Smith